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What is claimed is:

- 1        1. A substantially pure polypeptide complex comprising a Clostridium  
2        botulinum neurotoxin and more than one Clostridium botulinum type E neurotoxin  
3        associated polypeptide.
- 1        2. A complex of claim 1, wherein the neurotoxin associated polypeptide has a  
2        molecular weight of approximately 80 kDa and comprises the amino acid sequence  
3        TNLKPYIIYD (SEQ ID NO:4).
- 1        3. A complex of claim 1, wherein the neurotoxin associated polypeptide has a  
2        molecular weight of approximately 65 kDa and comprises the amino acid sequence  
3        MQTTTLNWDT (SEQ ID NO:3).
- 1        4. A complex of claim 1, wherein the neurotoxin associated polypeptide has a  
2        molecular weight of approximately 40 kDa and comprises the amino acid sequence  
3        MRINTNINSM (SEQ ID NO:2).
- 1        5. A complex of claim 1, wherein the neurotoxin associated polypeptide has a  
2        molecular weight of approximately 18 kDa and comprises the amino acid sequence  
3        MKQAFVFEFD (SEQ ID NO:1).
- 1        6. A complex of claim 1, wherein the neurotoxin associated polypeptide has a  
2        molecular weight of approximately 18 kDa and comprises the amino acid sequence shown in  
3        Fig. 8 (SEQ ID NO:5).
- 1        7. A substantially pure Clostridium botulinum serotype E neurotoxin associated  
2        polypeptide.
- 1        8. The polypeptide of claim 7, wherein the neurotoxin associated polypeptide  
2        has a molecular weight of about 80 kDa.

1           9.     The polypeptide of claim 8, wherein the neurotoxin associated polypeptide  
2     comprises the amino acid sequence TNLKPYIIYD (SEQ ID NO:4).

1           10.    The polypeptide of claim 7, wherein the neurotoxin associated polypeptide  
2     has a molecular weight of about 65 kDa.

1           11.    The polypeptide of claim 10, wherein the neurotoxin associated polypeptide  
2     comprises the amino acid sequence MQTTTLNWDT (SEQ ID NO:3).

1           12.    The polypeptide of claim 7, wherein the neurotoxin associated polypeptide  
2     has a molecular weight of about 40 kDa.

1           13.    The polypeptide of claim 12, wherein the neurotoxin associated polypeptide  
2     comprises the amino acid sequence MRINTNINSM (SEQ ID NO:2).

1           14.    The polypeptide of claim 7, wherein the neurotoxin associated polypeptide  
2     has a molecular weight of about 18 kDa.

1           15.    The polypeptide of claim 14, wherein the neurotoxin associated polypeptide  
2     comprises the amino acid sequence MKQAFVFEFD (SEQ ID NO:1).

1           16.    The polypeptide of claim 14, wherein the neurotoxin associated polypeptide  
2     comprises the amino acid sequence shown in Fig. 8 (SEQ ID NO:5).

1           17.    A substantially pure antibody that specifically binds to a Clostridium  
2     botulinum type E neurotoxin associated polypeptide having a molecular weight of  
3     approximately 80, 60, 45, or 18 kDa, or to a complex of any two or more of said neurotoxin  
4     associated polypeptides.

1           18.    A substantially pure antibody that specifically binds to a polypeptide complex  
2     of claim 1.

1        19. A method of detecting a serotype E neurotoxin complex in a sample, the  
2 method comprising:  
3              (a) contacting the sample with an antibody of claim 17, and  
4              (b) detecting antibody-bound polypeptide, if any, in the sample, the presence of  
5 antibody-bound polypeptide indicating the presence of serotype E neurotoxin in the sample.

1        20. The method of claim 19, wherein the sample is a foodstuff.

1        21. The method of claim 19, wherein the sample is a gastrointestinal, blood, or  
2 tissue sample obtained from a vertebrate animal.

1        22. A method of treating a patient who is suffering from a disease or condition  
2 associated with excessive release of acetylcholine from presynaptic nerve terminals, the  
3 method comprising administering to the patient a therapeutically effective amount of a  
4 polypeptide complex of claim 1.

1        23. The method of claim 22, wherein the excessive acetylcholine release causes  
2 undesirable contraction of smooth or skeletal muscle cells.

1        24. The method of claim 22, wherein the excessive release of acetylcholine causes  
2 profuse sweating, lacrimation, or mucous secretion.

1        25. A method of treating a patient who is suffering from spasticity occurring  
2 secondary to brain ischemia, or traumatic injury of the brain or spinal cord, the method  
3 comprising administering to the patient a therapeutically effective amount of a polypeptide  
4 complex of claim 1.

1        26. A method of treating a patient who is suffering from tension headache or pain,  
2 the method comprising administering to the patient a therapeutically effective amount of a  
3 polypeptide complex of claim 1.

1        27. A vaccine comprising a polypeptide complex of claim 1.

1           28. A method of vaccinating an animal against serotype E neurotoxin, the method  
2 comprising administering to the animal an effective amount of the vaccine of claim 27.

1           29. A vaccine comprising a polypeptide of claim 7.

1           30. A method of detecting a Clostridium botulinum serotype E neurotoxin in a  
2 sample, the method comprising:

3           (a) contacting the sample with a Clostridium botulinum type E neurotoxin associated  
4 polypeptide (NAP) of claim 7 that specifically binds a serotype E botulinum neurotoxin and  
5 thereby forms a NAP-neurotoxin complex, and

6           (b) detecting the NAP-neurotoxin complex, if any, in the sample, the presence of a  
7 complex indicating the presence of serotype E neurotoxin in the sample.

1           31. A complex of claim 1, comprising the neurotoxin and neurotoxin associated  
2 polypeptides having molecular weights of about 80 kDa, 65 kDa, 40 kDa, and 18 kDa.

1           32. The complex of claim 1, comprising the neurotoxin and neurotoxin associated  
2 polypeptides having molecular weights of about 118 kDa, 80 kDa, 65 kDa, 40 kDa, and 18  
3 kDa.